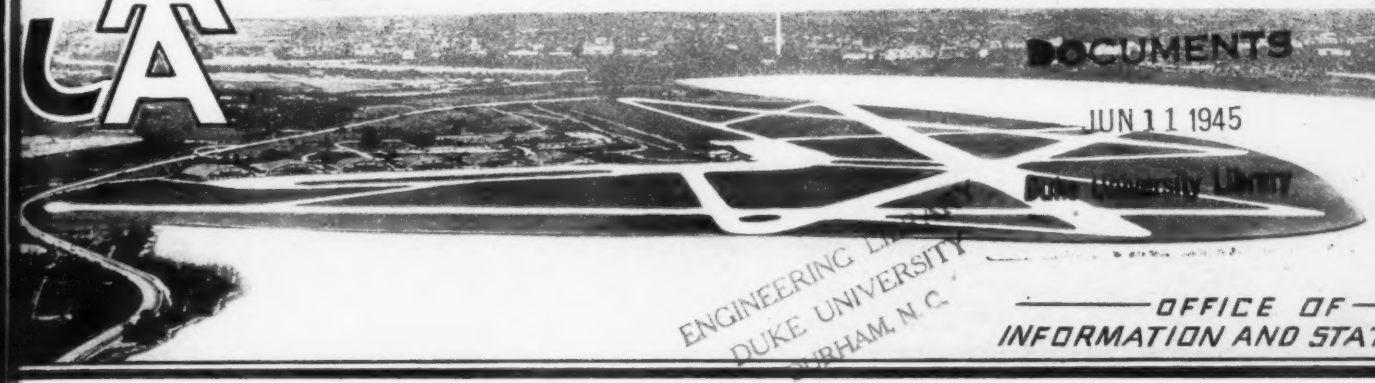
CAA JOURNAL



OFFICE OF
INFORMATION AND STATISTICS

Aviation Industry Is Studying Trends Of Public Thought on Private Plane

Tomorrow's private airplane is taking shape today through the efforts of the industry, which now is carefully studying the trend of public desire, declares Raymond B. Maloy, technical assistant to the Director of Safety Regulation, Civil Aeronautics Administration.

Among the probable characteristics of the peacetime private plane noted by Mr. Maloy is uniformity of control method of the various makes. This, he says, is already evident.

The CAA official points out that the aviation industry is availing itself of the guidance given it by the wide interest in "the personal plane of tomorrow."

In an address before the Society of Automotive Engineers in Detroit, Mr. Maloy discussed details of the requirements which the future market demands will impose upon private-plane design.

Safety Comes First—"It generally is agreed," he said, "that the public has certain definite desires regarding the function characteristics of the airplane and that the public is qualified to speak on this subject. But those desires very probably are all based on the assumption that the airplane is inherently safe and meets some minimum safety standard."

Proceeding, Mr. Maloy discussed details relating to definition of that minimum safety standard.

To obtain a basis for discussion of the desirable characteristics of the private plane," he said, "let us examine the private-flying accident record over a period of years for any clues it may offer. Admittedly, steady progress has been made in decreasing the private flying accident rate.

"Further interesting facts are found in the accident files and statistics of the CAA and CAB. Consider first the comparison of private flying accidents broken down by causes for the period 1929 to 1943. These show a slow but steady reduction in the percentage of powerplant and structural failure accidents while "personnel error" remains the largest single cause.

CAA and CAB Cooperate—"The Civil Aeronautics Administration and the Civil Aeronautics Board have been working in cooperation with the industry in the development of an airplane category system for purposes of design and operation. At present five categories of aircraft to be known as normal, transport-passenger, transport-cargo, training or utility, and acrobatic appear probable. However, an airplane could be certified in more than one category providing all the requirements of such categories were met. The aircraft proposed in this paper would fall in the normal category which will be placarded against all acrobatic maneuvers.

"The first item in any specification must be a rigid definition of the stall and spin characteristics to be required, since this is the one item which requires the greatest attention.

Requirements for Safety—"It is proposed that the requirements in this regard be as follows:

There should be inherent in the aircraft positive and adequate warning of the approaching stall in both straight and turning flight. There should be no tendency to spin from a full stall.

There should be no rolling prior to or simultaneous with pitching, or failing that, the motion should be controllable back to level flight, power on or power off with normal use of the controls.

To eliminate the turn-stall accidents, it should be possible to execute a sustained 60°-banked turn with or without power using full up elevator, with simultaneous application of full rudder in either direction without spinning and with no reversal of control force.

"In the event, the airplane can be made to spin, the spin itself should be such as to permit recovery with normal use of the controls in one and one-half turns without exceeding the limit maneuvering load factor or the placard dive speed, and it should not be possible to obtain an uncontrollable spin by any possible use of the controls, nor should any reversal of control forces be present.

"It is not suggested that the airplane actually be non-spinnable since if the above-mentioned stall characteristics are met, there is very little likelihood of an unintentional spin developing from any possible use or mis-use of the controls.

"All two-control airplanes should incorporate independent aileron control systems. This is necessary in order to afford a degree of safety comparable to that of conventional three-control airplanes where either the aileron or rudder system ceases to function.

Ease of Handling an Element—"Ease of handling of the aircraft and its ability to fly with a minimum of attention from the pilot should be considered. In this regard it is felt that the airplane should be statically and dynamically stable throughout the speed range of the aircraft, both with controls fixed or with controls free.

(*See Malay, page 60*)

Wide Use of Planes for 100-Mile-Plus Journeys Predicted by Burden

The "average reasonably well-to-do American" will do virtually all his traveling over distances of 100 miles or more by air, William A. M. Burden, Assistant Secretary of Commerce, told the Bond Club of Chicago in an address on "The Place of Aviation in Our Postwar Economy."

The Personal Plane—"There is no doubt that a large potential market is open to the manufacturer of personal aircraft but it can only be realized by the most energetic and intelligent effort on the part of industry and government combined. The rate of growth of private flying depends in a large part on the rate at which the usefulness of the private airplane can be increased. It must be made easier to fly, safer, cheaper, more reliable, and must be provided with an airport system relatively equivalent in convenience to our system of roads.

"On the airport side, the Airport Program submitted to Congress by the Civil Aeronautics Administration provides for doubling the number of airports in the country from 3,000 to 6,000 in the next ten years. The states are preparing to increase their efforts in the field of airport planning and construction.

"There is therefore every reason to believe that the sale of personal aircraft will grow at a rapid rate. Automobile registrations increased an average of 30 per cent a year from 1900 to 1910—a period when the automobile was still not a very useful vehicle. If aircraft registrations grow at the same rate, we will have 400,000 airplanes in the hands of private owners in 1955 and sales in that year will amount to 175,000 aircraft. This would mean a $350,000,000 commercial market.

Personal Aviation—"What of the possibilities for private or personal flying?"

"In appraising the possibilities in this field, we must remember the very low base from which development is starting. There were only 25,000 personal-type aircraft registered in 1941—fewer than there were automobiles in 1903.

"A very great percentage increase can be achieved from this level without the use of the private airplane becoming remotely comparable in scope to that of automobiles or even of motorboats.

"Many private fliers, of course, will continue their studies to the point where they become com-

(*See Burden, next page*)

Airplanes Which Race The Sun Viewed As Peacetime Possibility

A joint session of the Senate and House of Representatives of Maine heard L. Welch Pogue, chairman of the Civil Aeronautics Board, discuss the future of peacetime aviation in "clock stopping" terms.

Mr. Pogue was invited to address the legislators at the suggestion of Governor Horace A. Hildreth.

Racing the Sun—Mr. Pogue outlined the development of aviation, and what it will mean to Maine. He then suggested the possibility of leaving the New England seaboard at noon and arriving in Los Angeles at the same hour the same day. "Not so fantastic as it sounds," he said, when the sonic speed of airplanes of the future is considered. A plane following the "great circle course" at 867 miles an hour would travel with the sun, reaching the Pacific coast without loss of clocked time.

2,000-Mile-An-Hour Planes—"Our National Advisory Committee for Aeronautics, which is responsible for much of our splendid aeronautical advancement, is even now building a wind tunnel designed to make tests for planes flying 2,000 miles per hour.

"Why, at that rate we would be in Los Angeles at 10:15—one hour and 45 minutes before we left Boston. I must cease this speculation before I become my own grandfather."

"When we look then to the future of aviation," said Mr. Pogue, "we must not measure it in terms of a past which is gone; or even of a present which is also gone, even as we speak. We must look with imagination. Only in that way can we approach the truth. I doubt if the man who first discovered fire saw more than campfire uses for it; or if the man who invented the wheel could strain his imagination and conceive of more than a few of the millions of uses to which it has been put. And I doubt if even the most optimistic of the aviation enthusiasts see the full vision of the future.

War Contributes—"Despite the tremendous advances which we can review in the past, when we look to the future we know that aviation is on the threshold of even more spectacular achievements. As a result of the research which has been necessitated by the war, many new tools have been developed which can be used in civil aviation. Radar will enable planes to land in zero zero conditions. There are gas turbine engines, jet propulsion, new fuels, the flying wing, and a host of other developments coming which promise a new era in peacetime flying.

"We hear talk now of supersonic airplane speeds, that is, those exceeding 750 miles per hour—the speed of sound. There is increasing reference to clock-stopping schedules from, say, Boston to Los Angeles. Under such a schedule you could leave Boston at 12 noon and arrive in Los Angeles at noon, sharp, on the same day. That's only 867 miles per hour by way of the great circle course.

"But, seriously, increased speed, safety, and comfort will all be injected into air transportation in the future. Who can say what the effects of all these spectacular developments will be upon our lives.

"Who, among us, for example, has the confidence to say what he can predict with certainty what will be the precise effect upon your life when you, your letters, or the products of your factory are no more than 12 or 14 hours from any point in the United States? Or what the effect will be when you find yourself as close to nearly any great city of the world in point of time as you were in 1832 to Washington? What will be the new impact of your culture upon the nation and the world? Or the impact of the cultures of the rest of the world upon us which will come as a result

(*See Pogue, page* 55)

Control Systems Tested

ACTUAL service tests in bad weather of two approach control systems were started May 1 by the Civil Aeronautics Administration at LaGuardia and Washington National airports.

At the request of the Army and Navy and the airlines the so-called "Army-Navy" system, which employs station locators for holding and letting down, is being tested at LaGuardia Field. New ground equipment was ordered for testing this system. The CAA's system, using fan markers as the holding points, is under test at Washington, the ground equipment being used for other purposes. Only the relocation of some of the fan markers was necessary to institute the test. All planes using the two fields in instrument weather are participating in the comparative tests.

Burden

(*Continued from preceding page*)

petent all-weather pilots and make extensive use of their aircraft for business purposes. I would expect that business firms will prefer to hire their traveling salesmen from among the ranks of those who are competent pilots and will find it a sound investment to provide them with aircraft. And very large numbers of firms will own aircraft manned by professional pilots for the use of their executives.

Helicopter's Future—"As we get to the end of our postwar decade, and aircraft design, radio aids, and the airport system show continuing improvement and the helicopter comes into its own for certain specialized uses, we may find an expansion in the use of the personal aircraft that will far transcend the relatively modest estimates I have presented.

"In the field of international travel, the airplane will create a real transportation revolution. Very shortly after the war, service will be available from Chicago to London in 16 hours at a cost of some $250. There will be two or three trips a day at least and both time and cost will be further reduced in the following ten years.

Air Transporation—"What of air transport, its possibilities, and its effect on our habits of life in the years that lie ahead?

"The airlines are firmly established as part of our transportation system, and technical advances are assured which will greatly increase operating speeds, somewhat reduce costs, and very substantially improve safety. Within two or three years after the war, perhaps sooner, we will have a 2 hours and 40 minutes service between New York and Chicago with a fare of $30.00 and a safety record several times better than the busses or private automobiles. A few years thereafter, when jet propulsion is applied to the commercial airliner, speed will be increased still further and ultimately there is reason to believe that air transport will become the safest form of transportation.

Competition of Surface Carriers—"Surface carriers will doubtless bend their efforts to offer comfortable minimum accommodations at costs far below what the airlines can hope to reach and will thus retain a large volume of passenger business, particularly over the short hauls. But the average reasonably well-to-do American will do virtually all his traveling over distances of 100 miles or more by air.

"In terms of traffic this may mean a total volume of passenger travel five times the 1944 level within five or six years after the war. Eight or

(*See Burden, page* 59)

Wright Sees Jet Plane As Major Advance In Aviation's Progress

The inevitable use and adaption of jet propulsion to bring the airplane in the 500–600 mile an hour bracket is foreseen by T. P. Wright, Administrator of Civil Aeronautics.

He expressed this view in the introduction to G. Geoffrey Smith's book "Gas Turbines and Jet Propulsion for Aircraft." Smith's book describes all the steps leading to the present development with a background the author has obtained serving as editor of the English aviation magazine, "Flight."

Mr. Wright points out that we are already face to face with the problem of compressibility of the air at high speeds on various portions of the airplane, and that we have reached the velocity of sound especially at propeller tips.

"Although this compressibility phenomenon will create serious problems of drag increase of many parts of the aircraft other than the propeller, and although undoubtedly devising solutions for them will test our resourcefulness to the limit, nevertheless, now, at least, we have available a method of propulsion that will become more and more efficient as these difficulties are overcome, as no doubt they will be," Mr. Wright wrote.

"When one considers the relatively small total effort so far expended on these developments in terms of dollars or man hours in comparison with the millions put into perfecting the reciprocating gasoline engine and the aircraft propeller, it is easy to envisage the tremendous importance which the turbine and the jet will attain when equivalent sums have been expended on these. Fortunately, such scale of effort is now assured because of the backing furnished by the military services in England and the United States, and the energy with which many firms, institutions and individuals are attacking the problems.

"Mr. Geoffrey Smith, who has followed the developments of power plants for a great many years, and who early recognized the potential importance of the gas turbine as a desirable source of power for aircraft, emphasizes in his book the flexibility of this type of power plant both as a prime mover and as a source of jet drive. The operations of compression, combustion and expansion, which all must take place in the cylinder of the reciprocating engine, are here separated, thus making possible many alternative arrangements of these components.

"In addition, there are possible variations in the type of blower and in the turbine unit and, as well, a selectivity in method of obtaining thrust—by jet, by propeller, or by combinations of the two. One is attracted by the relative simplicity of these power units and is intrigued by a power plant that usese all rotating parts, recalling that the wheel was one of the first and most important invention's in man's evolution. (Strangely enough the wheel, a man-developed device, has few if any counterparts in nature, where there is a seeming preference for reciprocating and flapping motions.) Thus it appears that the gas turbine-jet combination is susceptible of expansion to larger and larger sizes and thrust outputs without undue difficulties or weight penalties.

"Developments of better heat resisting metals to improve turbine efficiencies; of more efficient compressors; and of improved firing chambers; together with the determination of most effective arrangement of components, will bring other advantages to light. Extension laboratory equipment designed especially for the development of aircraft gas turbines and jet propulsion, which is only now becoming available in England and the United States, can be expected greatly to accelerate progress."

(*See Wright, page* 53)

Air Freighter's Place In Peacetime Flying Is Surveyed By Four Governmental Agencies

Air freight and its possible expansion with the coming of peace is engaging the attention of the Civil Aeronautics Administration, Civil Aeronautics Board, the Weather Bureau, and the Industrial Reference Service of the Department of Commerce.

Modifications of Civil Air Regulations which will operate to the advantage of the cargo plane have been suggested by the CAA Flight Engineering and Factory Inspection Division.

If adopted, the rate of climb for air freighters with one engine inoperative at 5,000 feet will be less than that to be required of the passenger ship.

Experimental Flights—The Civil Aeronautics Board has authorized experimental flights of cargo planes loaded with fruits, vegetables and meats, and the Weather Bureau has prepared data, largely at the request of shippers, on temperature in relation to altitude. This information will enable a pilot to ascend to a height where nature will maintain a preservative temperature.

The Industrial Reference Service of the Department of Commerce has made extensive studies of air cargo transportation and the conclusions which follow were based on shipments between points in the United States and Chile, South America.

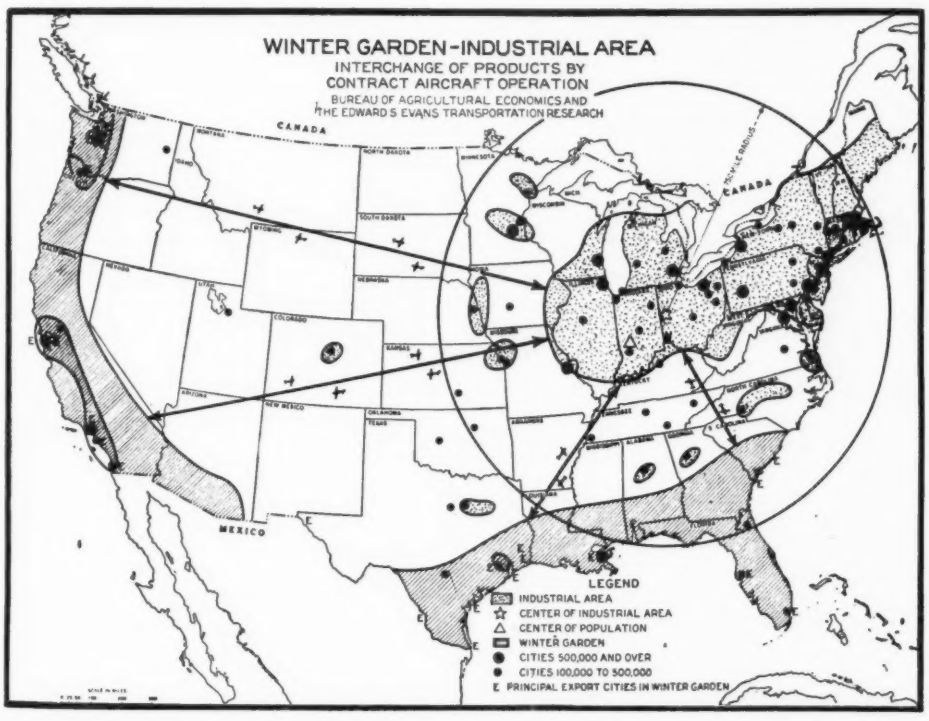
Air Freight Potentials—Prime requirements were given consideration in the Department of Commerce survey, to disclose what kind of articles may be considered as potential sources of air freight. They are value per pound, perishability and style factor, current demand). At 50 cents a pound the value of the air cargo might go as high as $3,000. Recent estimates of rates, made by non-governmental agencies, vary from five to 25 cents a ton-mile. The discrepancies are due to several factors among which are through shipments, origin to destination without handling; handlings at terminals; pick-up service and availability of cargo so that trips going and coming will be on a pay basis.

The two-way shipments were considered in preparing the accompanying map which shows the localities in which products of the soil are raised and regions where a cargo of merchandise for the return trip are to be obtained.

The rate for long non-stop flights naturally is higher than that charged for shorter runs as fuel requirements cuts down cargo space. A DC-3 has a flat cargo capacity of about 4 tons (8,000 pounds) and its gas consumption is about a gallon a mile. (One gallon weighs 6 pounds.) For a 1,000-mile run the plane must carry 6,000 pounds of gas leaving only 2,000 (one ton) for pay cargo. A run of half that distance would require only 3,000 pounds of gas and its pay cargo capacity would be two and one-half tons, 5,000 pounds.

In the immediate postwar period, it is thought, air cargo rates between the United States and South American cities may be from 10 to 15 cents per ton-mile. This estimate is based on the assumption that planes will carry freight both ways.

What is reported to have been the first all-freight air shipment left LaGuardia Field April 1 for Mexico City. The cargo consisted of three tons of drugs, including penicillin, films and publications. Among the shippers were E. R. Squibbs & Co., John B. Stetson Co., Coty, Inc., and the Office of Inter-American Affairs.



Long-Service "Empire" Flying-Boats

The case for the flying-boat is strengthened by the record of service now standing to the credit of the Empire Flying-Boats. The first of these, there were 28 in all, was launched in 1936. The majority were delivered and in service by the end of 1937. Today, thirteen of them are still in service and are described by their crews as being "as good as new."

The "Commercial" Shetland

An indication that Great Britain may play an important part in resolving the controversy now centered around the respective merits of the land-plane and the flying-boat in commercial operation is given by the news that the Shetland, originally planned for military work, is now being constructed in civil form.

Science Award Hints at Possibility of 2000 MPH Speed For Future Planes

Possibilities of airplane speeds in astronomical figures are hinted at in the eighth annual American Design award, which disclosed that the National Advisory Committee for Aeronautics is designing supersonic wind tunnels for the study of air flow over wings at velocities up to 2,000 miles an hour. The award announcement started NACA was actually testing planes capable of attaining that speed, and newspapers carried stories to that effect.

John F. Victory, secretary of the NACA, said the tunnels were being built "to learn more about the natural laws governing air flow over plane wings at speeds of 33 miles a second."

The award consists of a certificate and a check for $25,000, recognizing the achievements of American scientists for their contribution to the war effort.

The Human Element—At present, planes capable of speeds of from 500 to 600 miles an hour are flying, and even at those rates—low in comparison with 2,000—the human element has entered in the form of tolerance for acceleration and deceleration.

In a recent magazine article, in discussing that phase of speed limitation in relation to rocket powered planes, G. Edward Pendray, one of the organizers of the American Rocket Society, wrote, "It is generally accepted that a healthy, normal young man can stand an acceleration of six or seven gravity (192 to 224 feet per second) without serious effect."

Not long ago General H. H. Arnold of the United States Air Forces announced the new jet fighter plane, Lockheed P-80, as faster than the tailless German Messerschmitt. Its speed was given as "considerably more than 600 miles an hour."

The award particularly honored six scientists who constitute the scientific high command in various government created agencies set up to mobilize brain power to arm the nation with victory tools of every conceivable kind. At the request of the men honored, the award was made to the National Academy of Sciences as the body which represents all scientific effort in America.

The recipients, five of whom were present at the meeting when the award was made, are Dr. Vannevar Bush, director, Office of Scientific Research and Development; Dr. James Bryant Conant, chairman, National Defense Research Committee; Dr. Karl T. Compton, chief of the field service for the NDRC; Dr. A. Newton Richards, chairman, Committee for Medical Research; Dr. Jerome C. Hunsaker, chairman, National Advisory Committee for Aeronautics, and Dr. Ross G. Harrison, chairman, National Research Council. Dr. Conant, president of Harvard University, was absent because of illness.

The speakers, in addition to Mr. Hoving, were Dr. Compton, Under Secretary of War Robert P. Patterson and Dr. Jewett.

Alertness Urged—Dr. Compton warned that "if we are not to become an easy and inviting prey to the next well prepared aggressor, we must be alert to be ourselves prepared to meet what may come.

"What this may be," Dr. Compton added, "who can tell? Pilotless aircraft? Automatically guided missiles? Disease germs? Super long-range bombardments with super explosives? Devices not now even envisaged? What can we do to keep such horrors from being unleashed, or to protect ourselves against them if they are?

(*See Science Award, page* 57)

Military Fliers Are Given First Call On CAA Tests

25,000 Get Certificates

Military fliers who wish to be certified as civilian pilots are given number one priority for examination Administrator T. P. Wright of Civil Aeronautics announces. A total of 25,000, still in service, have taken the tests and received their civilian certificates during the past five months.

"The Civil Aeronautics Administration, anticipating a flood of applications immediately following the war, revised regulations in November, 1944, to permit pilots to obtain civilian certificates," Mr. Wright said. "Since then, the entire staff of CAA Flight Inspectors has spent as much time as possible at military air fields, instructing and examining military pilots.

"The military pilot presents credentials to prove his flight status, and must pass a simple written examination on the Civil Air Rules and Regulations. Most pilots have studied these subjects while training at Primary Ground schools, and are thoroughly familiar with them through this study and practice flying along the Federal Airways.

"Our CAA Flight Inspectors are making this huge task their number one priority in most sections of the country. They know that as soon as military pilots are released in large numbers the task will be unmanageable so they are getting as much done as possible before the deluge begins. We have been examining more than 2,000 a week, and expect this average to become higher each week. More than 3,000 were examined last week."

Recent CAA and CAB Addresses

Copies of addresses made by the Civil Aeronautics Administration and the Civil Aeronautics Board are obtainable from the CAA Information and Statistic Service and the CAB Public Information Section, both in the Department of Commerce Building, Washington, 25, D. C.

CAA Releases

"CAA Studies Helicopter Problems with Craft Borrowed from Army."

"Non-scheduled Flying Committee Makes First Report to CAA."

"Private Pilot Physical Examinations May Be Performed by Any Physician."

"CAA Advises Cities to Buy Airport Land Now."

"'Jerry' Sweet, CAA Lighting Expert, Dies."

"CAA Giving 3,000 Certificates a Week to Military Pilots."

CAA Speeches

Paper prepared by Raymond B. Maloy, Technical Assistant to the Director, Safety Regulation, CAA. To be given before the Society of Automotive Engineers, Detroit, Michigan, Monday, May 7, 1945.

Address by William A. M. Burden, Assistant Secretary of Commerce, Bond Club of Chicago, April 20, 1945.

Address by Phoebe Omlie, Research Liaison Officer, Civil Aeronautics Administration. Women's Chamber of Commerce of Greater Little Rock, Arkansas, May 3, 1945.

Airport—For Boston and the Nation. Address by William A. M. Burden, Assistant Secretary of Commerce. Aeronautical Association of Boston, Hotel Statler, 12:15, March 28, 1945.

CAB Speech

Address by L. Welch Pogue, Chairman, Civil Aeronautics Board, "Maine and the New Transportation", before the Maine Legislature.

Air Transport Routes Upped 5316 Miles In '44

The Civil Aeronautics Board in its Annual Report to Congress covering the period Nov. 1, 1943, to Oct. 31, 1944, stated the domestic airlines, despite insufficient equipment, flew more revenue passenger miles and more mail and express pound miles in August, 1944, than at any time in the history of air transportation.

The airlines financial position remained sound, with domestic carriers showing a net income of $27,000,000 for the 12-month period covered by the report, and net profit after taxes of about $15,000,000; earned surplus of $42,000,000, with 10 carriers paying dividends. International carriers realized a net profit of about $1,500,000.

The Board also stated that 16 cities and 5,316 miles of route were added to the domestic air transportation system during this 12-month period, bringing the total number of cities served to 398 and the total route miles to 58,646. The Board issued proposals for international routes which would add roughly 75,000 miles to our international air transportation system, bringing the total to about 125,000 miles of globe-circling routes. Hearings on applications for expansion in both the domestic and international fields were proceeding as rapidly as possible.

It was pointed out in the report that the regular work of the Board increased steadily throughout the year. For the 12-month period ended June 30, 1944, 67 new routes or amendment applications were disposed of by the Board, with 738 applications, including those for new routes or amendments, foreign permits, mail rates, interlocking relationships, etc., still on the formal docket of the Board. During the year ended June 30, 29 hearings involving 108 applications had been held. Hearings were held or were in progress between July 1, 1944, and November 1, 1944, on 134 applications for new routes or amendments.

England Offers Medals to CAA Men for Alaska Rescue

Risking their lives, three employees of the Civil Aeronautics Administration at Metlakatla, Alaska, saved the crew of a British Bolingbroke bomber. For their bravery they will receive the British Medal for Extraordinary Heroism if a bill, introduced by Senator Warren G. Magnuson, Wash., and permitting them to accept the decoration becomes a law.

The bomber, loaded with ammunition, crashed November, 1943, within sight of CAA Radio Electrician Charles Rex Marchant and Mechanics Loren E. Sasseen and Jack Venice Bassett, throwing three of the crew clear. The seriously injured British pilot and co-pilot were carried 150 yards to safety. The third man was found wandering around in a dazed condition.

When Marchant learned that a fourth man was still in the plane, which contained a live bomb, he went through a barrage of whizzing bullets to drag the disabled man from the plane before the bomb exploded.

For their heroism, Bassett, Sasseen and Marchant, the latter two still with the Civil Aeronautics Administration, each have been awarded the Carnegie Medal and $500 in cash.

Sees Electronics as Ending Blind Landings after War

Two-way radio sets for private planes will be produced at a cost of about $100 after the war Ernest R. Breech, president of the Bendix Aviation Corporation, predicts.

"Obviously the average private pilot cannot buy the type of airborne electrical equipment which will be used by the super airliners," Breech said. "However electronic ground equipment will guide both personal airplanes and commercial airliners to landings.

Vol. 6 May 15, 1945 No. 5

CAA JOURNAL

Henry A. Wallace
Secretary of Commerce

Civil Aeronautics Administration
T. P. Wright, Administrator

Issued on the 15th of each month. Subscription $0.50 a year. Sold by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Approved by the Bureau of the Budget.

INFORMATION AND STATISTICS

Q—I am considering buying one of the surplus Army primary trainers being offered for sale by the Defense Plant Corporation. What do I do to get a civilian airplane license for such a plane?—R. T.

A—When you purchase such an airplane, you are given approval for one flight to your home base. It is then necessary for you to have the plane inspected by a CAA aircraft inspector. If the plane meets specifications you will receive your license at once; if not, the inspector will tell you what repairs are necessary to put the plane in condition to be licensed.

Q—I was turned down by the Naval Air Corps because I have an allergy to certain pollens. Does this bar me from a civilian pilot's license?—C. P.

A—No.

Q—How may I obtain a certificate as an instrument inspector and repair man?—T. J. S.

A—You must pass an examination given by a CAA inspector. Data which will be of assistance to a person taking this test has been prepared by the Civil Aeronautics Administration and will be supplied upon request to the CAA Office of Information and Statistics, Washington, 25, D. C.

Q—If it comes to a person's attention that a licensed pilot is drinking too much, whose duty is it to report?—R. T.

A—Any good citizen's.

Arthur Jeremiah Sweet

Arthur Jeremiah Sweet, noted lighting engineer, died April 6 at his home, 1314 Saratoga Ave., N.E., Washington, D. C.

Mr. Sweet was employed in the Technical Development Division of the Civil Aeronautics Administration, where he had been working on a novel lighting system for landing airplanes in fog.

He was a pioneer in the field of street lighting, and served as lighting engineer for the Pennsylvania Turnpike.

Born at Oneida, N. Y., in 1879, Mr. Sweet was a graduate of Cornell and M.I.T. Before joining the CAA, he had been associated with various Westinghouse interests, and had conducted an independent consulting practice.

He is survived by his wife, Dea; a son Hubert, employed in New York City; and a son Arthur, with the Army in Italy.

CAA Is Praised For Part In Preparation For War

Representative Karl Stefan, Nebr., recently addressed the House on the achievements of the Civil Aeronautics Administration, largely in connection with its part in preparation for war. Notable in this connection was the work in Alaska where an important airfield, constructed at Cold Bay by the CAA without official authorization, made possible the repulse of the Japs when they attacked Dutch Harbor.

"Congress will not feel disturbed, I am sure," said Representative Stefan, "to know that an official of the CAA took matters in his own hands and, before money was allocated for this specific purpose, began construction of this important field."

He referred to the work and achievement of the Civil Pilot Training program which had a pool of more than 50,000 civilian pilots when Japan struck Pearl Harbor, Dec. 7, 1941, "And, of course you know how the products of these training schools have made out: Major Dick Bong, Captain Walter Mahurin and Major Joe Foss all learned to fly with CPT."

Speaking of the peacetime future of aviation Mr. Stefan said, "More than 300,000 service pilots will be certificated in this country when all the boys come home. We have a tremendous plant in which to manufacture peacetime planes and accessories. Most of us anticipate that the aviation business will move up to the bracket of the top three or four leading industries in the whole country, and if it does the CAA will be ready."

Foreign Service Inoculations

Civil Aeronautics Administration employees who are detailed to foreign service probably will be given the customary inoculations at as widely spaced intervals as possible. The suggestion is made so that injections for different maladies will not conflict with unpleasant consequences.

Wright

(*Continued from page* 50)

How the Turbine Works—In the gas turbine, a flow of expanding gas is driven past vanes which are forced to revolve, thus rotating the shaft of a propeller.

In jet propulsion, air is compressed in a chamber. Fuel is then injected into this chamber and ignited. The heated air, expanding, rushes out of jets toward the rear producing a thrust forward. The propulsion does not result from the heated air pushing rearward against the outside air. It results from the forward push of the heated air within the combustion chamber. Being free to expand through the jet opening toward the rear, and tending to expand equally in all directions, the heated air exerts most of its force forward. Thus jet propulsion is just as efficient in the higher altitudes where the air is less dense, and where the escaping air would have little to push against as it is at the earth's surface. In fact, the cooler temperatures at high altitudes enhance jet efficiency, making high altitude flying with jet propulsion more efficient than at lower altitudes.

CAA Studies Jet—Development of jet propulsion and its application have been closely followed by members of the Civil Aeronautics Administration's division of engineering for some time. Those studies are continuing and keeping pace with the progress being made in this field.

Jet powerplants now are used in assisted take-offs, greatly accelerated them and increasing the angle of climb. This phase of the development has been closely followed, and while engineers are agreed the jet is not likely, in its present stage, to be used for private planes the methods may have a direct bearing on the size of airports of the future in decreasing the length of runways. The quick, sharp-angle take-off has been closely studied in this connection.

These CAA Girls Are Doing Their Part

Exemplifying the close cooperation of civilian and military personnel to speed victory are these two CAA-trained women control tower operators, Wilma McIntyre (left) of 165 West 10th St., Buena Park, Calif., and Joan Earlywine of 3415 Snohomish Ave., Everett, Wash. They handle, with veteran skill, all military operational and civil traffic at the Marine Corps Air Station, Santa Barbara, Calif.

In addition to directing civil traffic, they expedite the daily flights of several Marine fighter and torpedo-bomber squadrons in training there for service aboard newly-commissioned carriers.

Weather Study Intensified

War-developed weather forecasting techniques, which have reached a higher degree of accuracy and perfection than ever before in the history of the world, will be available to experts of all the Americas when peace comes and the great new era of air travel begins. Weather Bureau officials from the American Republics, realizing the importance of this study and its role in the postwar world, are now in the United States working out with the North American scientists this new science of long-range forecasting.

Milwaukee Gets New Airport On Lake Front Near City Hall

Approval by the Civil Aeronautics Administration, and authorization by the Milwaukee Common Council assures that city of an experimental landing field on the lake front, about one mile from City Hall.

The city council appropriated $10,000 for the work, which will be under the supervision of the Board of Harbor Commissioners, and the major portion of it will be done by municipal agencies.

Domestic Air Carrier Statistics

Operations for March 1945

Prepared from official reports, submitted by the air carriers listed, to the Civil Aeronautics Administration and the Civil Aeronautics Board

Operator and routes		Revenue miles flown	Revenue passengers carried[1]	Revenue passenger miles flown	Express carried (pounds)	Express pound-miles flown	Passenger seat-miles flown	Revenue passenger load factor (per cent)
All American Aviation, Inc., Pittsburgh-Huntington, Jamestown, Williamsport, Harrisburg, Washington	**Total**	**125,732**	**0**	**0**	**15,668**	**2,592,043**	**0**	—
American Airlines, Inc.	**Total**	**3,714,668**	**96,130**	**59,847,083**	**2,885,015**	**1,440,403,401**	**66,797,687**	**89.59**
Dallas-Los Angeles		1,202,547	23,251	20,780,037	363,206	346,275,435	22,211,352	93.56
New York-Chicago[2]		559,902	22,397	8,350,526	973,186	459,442,619	9,249,994	**90.28**
Boston-New York		212,528	21,232	3,690,860	477,990	74,839,791	4,291,234	86.01
Cleveland-Nashville		91,688	6,025	1,551,422	140,379	36,881,875	1,857,982	83.50
New York-Fort Worth		1,052,646	29,539	16,134,087	528,817	328,889,514	18,156,647	88.86
Washington-Chicago		163,611	5,864	2,414,402	160,316	59,431,855	2,937,419	82.19
Chicago-Fort Worth		223,573	8,382	3,767,750	156,819	73,790,742	4,365,726	86.30
Buffalo-Toronto		4,104	873	66,348	5,959	452,884	85,804	77.33
El Paso or Fort Worth-Mexico City		204,069	3,470	3,091,651	78,343	60,398,686	3,641,529	84.90
Braniff Airways, Inc.	**Total**	**619,080**	**24,485**	**10,465,667**	**237,530**	**114,358,623**	**12,155,555**	**86.10**
Chicago-Dallas		343,843	11,976	5,844,844	170,964	98,213,372	6,605,962	88.48
Denver-Brownsville		241,244	12,459	4,126,632	57,674	14,717,169	4,865,672	84.81
Houston-Nuevo Laredo		33,993	2,885	494,191	8,892	1,428,082	683,921	72.26
Chicago & Southern Air Lines, Inc.	**Total**	**361,985**	**11,972**	**5,469,762**	**154,838**	**62,927,518**	**7,526,110**	**72.68**
Chicago-New Orleans		298,005	10,521	4,437,806	133,540	54,956,246	6,197,774	71.60
Memphis-Houston		63,980	2,939	1,031,956	21,298	7,971,272	1,328,336	77.69
Continental Air Lines, Inc.	**Total**	**268,229**	**7,908**	**3,185,476**	**45,543**	**21,758,740**	**4,259,048**	**74.79**
Denver-El Paso-San Antonio		165,849	4,947	1,753,105	19,010	8,195,799	2,207,164	79.43
Denver-Tulsa		35,464	1,906	508,920	5,464	1,834,736	729,096	69.80
Denver-Kansas City		66,916	1,791	923,451	21,069	11,728,205	1,322,788	69.81
Delta Air Corporation	**Total**	**449,902**	**19,479**	**7,706,655**	**110,806**	**42,755,652**	**9,412,621**	**81.88**
Charleston or Savannah-Forth Worth		378,714	16,057	6,522,761	72,739	30,020,669	7,964,892	81.89
Atlanta-Cincinnati		71,188	3,547	1,183,894	38,067	12,734,983	1,447,729	81.78
Eastern Air Lines, Inc.	**Total**	**2,115,644**	**65,591**	**35,234,368**	**857,552**	**454,650,059**	**40,219,069**	**87.61**
Boston-San Antonio or Brownsville		680,205	21,709	11,399,960	275,703	146,169,994	13,413,060	84.99
Boston-Miami		841,697	26,667	13,437,542	341,134	180,859,793	15,094,217	89.02
Chicago-Jacksonville		331,671	13,988	6,016,376	134,464	71,289,129	6,539,621	92.00
Atlanta-Miami		160,395	6,506	2,785,163	65,002	34,462,474	3,161,219	88.10
Washington-St. Louis		101,676	4,139	1,595,327	41,249	21,868,669	2,010,952	79.33
Inland Air Lines, Inc.	**Total**	**142,655**	**4,930**	**1,605,454**	**10,529**	**2,805,060**	**2,447,827**	**65.59**
Denver-Great Falls		107,127	4,575	1,436,358	10,234	2,727,667	2,169,048	66.22
Cheyenne-Huron		35,528	720	169,096	295	77,393	278,779	60.66
Mid-Continent Airlines Inc.	**Total**	**236,116**	**9,749**	**2,531,411**	**37,648**	**10,990,068**	**4,016,190**	**63.10**
Minneapolis-Tulsa		150,805	6,094	1,604,693	29,767	9,130,420	2,314,043	69.35
Minneapolis-Des Moines, St. Louis or Kansas City		85,311	3,774	929,718	7,881	1,859,648	1,702,147	54.62
National Airlines Inc.	**Total**	**484,320**	**12,218**	**5,957,445**	**50,229**	**25,532,455**	**6,441,906**	**92.48**
New York-Key West via Miami		324,819	8,522	4,075,257	26,881	16,189,753	4,355,296	93.57
Jacksonville-New Orleans		159,501	5,051	1,882,188	23,348	9,342,702	2,086,610	90.20
Northeast Airlines Inc.	**Total**	**110,084**	**6,951**	**1,409,335**	**15,514**	**3,546,418**	**2,427,387**	**58.06**
Boston-Presque Isle and Moncton		83,198	5,356	1,102,352	13,815	3,353,291	1,848,810	59.62
Boston-Montreal		26,886	1,602	306,983	1,699	193,127	578,577	53.06
Northwest Airlines Inc.	**Total**	**822,855**	**21,297**	**14,042,859**	**246,172**	**132,448,253**	**16,185,522**	**86.76**
Chicago-Twin Cities-Seattle; Fargo-Winnipeg		816,519	21,297	14,042,859	245,873	132,405,197	16,185,522	86.76
Minneapolis-Duluth		6,336	0	0	299	43,056	0	—
Pennsylvania-Central Airlines Corporation	**Total**	**849,580**	**60,514**	**13,416,323**	**894,751**	**197,044,509**	**17,403,453**	**77.09**
Norfolk-Detroit		517,673	39,551	8,443,936	558,737	117,993,499	10,564,045	79.93
Detroit-Milwaukee or Chicago		229,904	17,668	3,544,848	278,250	59,199,100	4,751,078	74.61
Pittsburgh-Buffalo		22,607	1,590	314,576	11,503	2,247,318	468,993	67.07
Pittsburgh-Birmingham		79,396	3,419	1,112,963	46,261	17,604,592	1,619,337	68.73
Transcontinental & Western Air Inc.	**Total**	**2,342,860**	**38,267**	**35,274,838**	**1,823,281**	**957,956,079**	**39,317,419**	**89.72**
New York-Los Angeles		1,575,325	31,928	24,290,155	1,027,443	660,919,773	26,647,191	91.15
Dayton-Chicago		55,297	3,477	828,920	145,178	35,178,784	1,013,823	81.76
Winslow-San Francisco		149,214	5,889	2,376,504	47,261	18,560,330	2,549,916	93.20
Kansas City-Pittsburgh via Chicago		400,718	9,962	5,354,528	384,521	194,557,965	5,926,816	90.34
St. Louis-Detroit via Cincinnati and Dayton		68,666	4,343	947,783	145,250	22,785,034	1,347,912	70.31
Washington-Dayton via Columbus		93,640	4,313	1,476,948	73,628	25,954,193	1,831,761	80.63
United Air Lines Inc.	**Total**	**3,091,594**	**63,716**	**44,189,442**	**1,146,960**	**928,122,025**	**46,207,351**	**95.63**
New York-San Francisco		2,335,326	30,862	29,767,090	904,628	805,522,721	31,128,529	95.63
Salt Lake City-Seattle		148,210	5,001	2,967,071	47,815	31,102,541	3,225,478	91.99
Seattle-San Diego		524,506	24,182	9,929,454	167 576	82,365,917	10,176,907	97.57
Seattle-Vancouver		14,592	1,925	265,421	5,505	685,062	303,347	87.50
Washington-Toledo		68,960	1,746	1,260,406	21,436	8,445,784	1,373,090	91.79
Western Air Lines Inc.	**Total**	**396,269**	**15,399**	**6,867,216**	**94,920**	**43,438,776**	**7,762,666**	**88.46**
San Diego-Salt Lake City		205,409	7,079	3,765,557	68,903	35,169,042	4,043,586	93.12
San Lake City—Great Falls		62,285	2,306	831,051	2,982	717,432	1,267,395	65.57
Great Falls-Lethbridge		10,084	649	86,818	253	34,242	205,558	42.24
Los Angeles-San Francisco		118,491	6,157	2,183,790	22,782	7,518,060	2,246,127	97.22
Total		**16,131,573**	**458,606**	**247,206,334**	**8,626,956**	**4,441,329,679**	**282,579,811**	**87.48**
Colonial Airlines Inc. New York-Montreal	**Total**	**117,326**	**5,621**	**1,748,733**	**21,048**	**5,977 840**	**2,463,846**	**70.98**
Hawaiian Airlines Ltd. Honolulu-Hilo and Port Allen	**Total**	**85,817**	**10,579**	**1,497,394**	**567,403**	**87,580,847**	**1,584,096**	**94.53**
Grand Total		**16,334,716**	**474,806**	**250,452,461**	**9,215,407**	**4,534,888,366**	**286,627,753**	**87.38**

[1] The total passengers carried for each airline is an unduplicated figure with the exception of United whose unduplicated figure was not available.
[2] Includes mileage and traffic for Syracuse-Cleveland formerly carried as a separate route.

$7,500 in Airport Prizes

The Andrew J. Hare Airport Awards contest, sponsored by the National Aviation Trades Association, with prizes totaling $7,500, closes Sept. 1. The first prize is $5,000; second, $1,000; third, $500, and ten more of $100 each.

Delta Breaks Record in Birmingham

Ed Bishop, district traffic manager for Delta Air Lines at Birmingham, Ala., reports that a total of 2,752 passengers used the airline's service in and out of that city during March.

Approve Airplane Contracts

Louis M. Dreves, Chairman, Rheem Manufacturing Co., announces contracts totaling more than $17 million have been approved by the Los Angeles Area Production Urgency Committee.

Operations for first three months of 1945 compared with same period of 1944

Operator	Revenue miles flown January–March		Revenue passengers carried (unduplicated)[1] January–March		Revenue passenger miles flown January–March	
	1945	1944	1945	1944	1945	1944
All American Aviation, Inc.	312,134	249,282	0	0	0	0
American Airlines, Inc.	10,106,544	6,626,608	250,091	170,799	157,469,594	102,117,357
Braniff Airways, Inc.	1,668,231	1,032,731	65,986	39,332	27,847,988	16,783,272
Chicago & Southern Air Lines, Inc.	990,390	518,831	31,787	18,593	14,486,191	8,401,671
Continental Air Lines, Inc.	754,843	395,959	20,314	11,011	8,224,769	3,554,886
Delta Air Corporation	1,195,061	686,916	51,224	31,644	20,479,514	12,607,089
Eastern Air Lines, Inc.	5,729,626	3,485,010	172,175	90,153	94,323,361	53,607,665
Inland Air Lines, Inc.	398,875	193,835	13,030	2,824	4,210,735	927,585
Mid-Continent Airlines, Inc.	639,714	496,756	22,731	13,758	6,064,085	3,993,928
National Airlines, Inc.	1,236,655	660,500	32,423	23,642	14,833,411	7,857,142
Northeast Airlines, Inc.	306,068	217,095	16,888	9,044	3,516,605	2,220,205
Northwest Airlines, Inc.	2,303,269	1,329,134	56,087	27,720	36,752,377	18,891,700
Pennsylvania-Central Airlines Corporation	2,014,383	772,217	132,562	56,004	29,073,259	12,509,646
Transcontinental & Western Air, Inc.	6,270,493	4,048,635	97,808	69,775	90,708,006	58,073,087
United Air Lines, Inc.	8,349,021	6,062,330	146,077	129,239	114,015,773	90,995,471
Western Air Lines, Inc.	1,130,704	580,155	42,287	18,971	18,865,320	9,265,765
Total	43,406,011	27,355,994	1,151,470	712,509	640,870,988	401,806,469
Index (1944 = 100)	158.67	100.00	161.61	100.00	159.50	100.00
Colonial Airlines, Inc.	319,112	165,458	14,235	8,847	4,465,865	2,707,742
Hawaiian Airlines, Ltd.	248,432	216,209	30,523	24,974	4,360,472	3,365,666
Grand Total	43,973,555	27,737,661	1,196,228	746,330	649,697,325	408,079,877
Index (1944 = 100)	158.53	100.00	160.28	100.00	159.21	100.00

Operator	Express carried (pounds) January–March		Express pound-miles flown January–March		Passenger seat-miles flown January–March		Revenue passenger load factor (percent) January–March	
	1945	1944	1945	1944	1945	1944	1945	1944
All American Aviation, Inc.	31,162	24,859	5,293,601	3,731,964	0	0	—	—
American Airlines, Inc.	7,580,142	4,917,267	3,583,720,743	2,249,942,421	180,358,428	116,608,535	87.31	87.57
Braniff Airways, Inc.	543,191	243,131	260,703,207	114,598,095	32,979,384	18,165,409	84.44	92.39
Chicago & Southern Air Lines, Inc.	446,202	210,139	183,385,371	87,551,139	20,476,077	10,350,045	70.75	81.18
Continental Air Lines, Inc.	118,893	35,089	55,537,379	15,921,020	10,952,977	4,297,353	75.09	82.72
Delta Air Corporation	324,797	217,706	126,416,493	83,972,445	24,647,504	14,029,734	83.09	89.86
Eastern Air Lines, Inc.	2,183,390	1,140,570	1,220,049,778	746,857,117	109,443,606	61,883,910	86.18	86.63
Inland Air Lines, Inc.	22,586	5,543	5,822,474	1,275,897	6,569,833	1,377,748	64.09	67.33
Mid-Continent Airlines, Inc.	101,096	47,666	30,094,063	12,188,478	10,349,199	6,119,895	58.59	65.26
National Airlines, Inc.	124,815	101,573	56,864,132	33,571,543	16,253,429	9,010,053	91.26	87.20
Northeast Airlines, Inc.	49,636	27,935	9,776,797	4,937,058	6,733,611	4,558,995	52.22	48.70
Northwest Airlines, Inc.	749,634	459,863	418,390,451	241,068,721	44,481,694	23,573,869	82.62	80.14
Pennsylvania-Central Airlines Corporation	2,046,924	1,005,049	432,766,828	181,899,640	40,781,664	16,035,255	71.29	78.01
Transcontinental & Western Air, Inc.	4,645,146	2,659,769	2,443,926,159	1,340,427,704	105,030,431	66,491,288	86.36	87.34
United Air Lines, Inc.	3,012,251	2,444,357	2,398,555,013	1,815,005,806	121,182,298	95,870,661	94.09	94.91
Western Air Lines, Inc.	310,786	232,669	144,290,863	125,935,287	22,241,422	11,329,668	84.82	81.78
Total	22,290,651	13,773,185	11,376,624,352	7,058,884,335	752,481,557	459,702,619	85.17	87.41
Index (1944 = 100)	161.84	100.00	161.17	100.00	163.69	100.00	97.44	100.00
Colonial Airlines, Inc.	51,564	40,888	15,542,718	12,440,192	6,700,854	3,474,634	66.65	77.93
Hawaiian Airlines, Ltd.	1,625,155	1,572,002	252,589,640	249,744,171	4,606,560	3,816,024	94.66	120.13
Grand Total	23,967,370	15,386,075	11,644,756,910	7,321,068,698	763,788,971	466,993,277	85.06	87.38
Index (1944 = 100)	155.77	100.00	159.06	100.00	163.55	100.00	97.34	100.00

	January	February	March	Total
Passengers carried (unduplicated) total revenue and non-revenue[1]:				
16 domestic airlines	364,641	343,203	468,014	1,175,854
Total airlines	379,714	356,838	484,325	1,220,877
Passenger miles flown (total revenue and non-revenue):				
16 domestic airlines	209,239,114	190,102,158	251,103,217	650,444,489
Total airlines	212,143,608	192,818,644	254,373,710	659,335,962

[1] Preliminary. Due to the delay in reporting by some companies, these figures are subject to revision in subsequent publications.

British Woman Flier Says Piloting Is Closed to Sisters

To the question by English women who have been doing flying work in the war effort, "How can I get a flying job after the war?", Senior Commander Pauline Gower, English pilot and author, gives what she describes as a "brutally frank" answer: "You can't."

Miss Gower is director of Women Personnel of the British Air Transport Auxiliary. In an English newspaper interview, she dashes, with cold logic, the aspirations of girls for paid flying jobs after the war. As to flying transports, she says prejudice against women still exists. Nor does she think women will be trusted with mail or valuable freight.

Older women, perhaps those with gray hair and motherly ways, would be good demonstrating pilots for airplane sales, Miss Gower believes, where a "dramatic, sporting young Diana" might not convince the purchaser that airplanes are safe and easy to fly. There will also be openings for women pilots as instructors.

These two jobs that involve flying are the only ones that will be open to women, she believes,

Air Mail 27 Years Old

AIR Mail was 27 years old the 15th of May.

Air Mail, upon which Uncle Sam has spent $418,596,354.61 quit being a dead load in 1943. Since that time, it has been paying Uncle Sam back and by June 30 of this year, the total sum will be paid back in profit. This is the expectation of the Postoffice Department.

In the 27 years, Air Mail has turned in $358,780,938.58. That leaves Uncle Sam "out" $59,815,416.03, but since Air Mail is still operating at a profit, that deficit will be wiped out. Air Mail has been doing so well, according to the Postoffice that rates have been lowered to Central and South America.

Pogue

(*Continued from page* 50)

of the increased and quickened social and business interchange of world-wide travelers and commodities?

Aviation Revolutionary Force—"I have the deep conviction that aviation is a revolutionary force in the life of man. It is forcing him, and it will continue to require him, to 'rethink his world.' The world we are here talking of is organized upon ideas. The airplane, having brought all the physical world into easy reach, makes it necessary to reexamine such ideas as nationalism, international cooperation, balance of power, trade barriers, travel restrictions, public health, and many other important premises accepted by our ancestors and passed on to our own time." Continuing Mr. Pogue said: "We must now rapidly grow into a new mental world. It is our opportunity, announced by the whirr of propellers. We shall hear those propellers or their counterparts constantly in our future lives. Let us pray that man will be equal to the task of so rethinking his world as to make the future whirr of those propellers not a prelude to death, but symbols of a united economic, political, and cultural world."

Report on Transport Crash—Loss of control during take-off was found by the Civil Aeronautics Board, on the basis of evidence, to be the probable cause of the crash of Pan American's Flight 218 near Antilla, Cuba, on August 8, 1944. Nine of the 26 passengers and the five crew members survived.

The aircraft was being operated under proper certification and the pilot had the necessary experience to meet general minimum requirements, the Board states.

According to testimony of the pilot, 27-year-old Captain Marion K. Williams, the flying boat functioned normally while taxiing out to the take-off area with the exception of the inboard engines which tended to heat. This was corrected, however, by use of the outboard engines.

Reaching the take-off area the plane was headed into the wind and take-off started. With a gradual opening of the throttles to 33½ inches of manifold pressure, the plane appeared to go on the step normally and was making approximately 75 knots. Captain Williams then requested an increase in manifold pressure to 35 inches and upon attaining an estimated speed of between 78 and 80 knots, the craft left the surface of the water.

The pilot declared the plane rose to a height of 10 or 12 feet, and he then relaxed back pressure slightly in order to gain speed, whereupon the plane seemed to want to go back on the water so he pulled back on the yoke. When it became obvious that the craft was going to go back on the water anyway, he dropped the nose quickly to "flatten out." After striking, bow first, the plane left the water again in a slightly nose-high attitude, rose higher than before and then returned to the water at a much steeper angle.

The third time, the plane rose out of control to a height of 25 feet, in a steeper angle of climb than previously—then nosed down at a sharp angle and struck the water violently. The throttles were not cut at any time.

The nose of the boat struck the water with such force it caused the hull to fracture and completely separate just aft of the pilot's compartment. The after portion of the plane, which included four passenger compartments, pitched forward and came to rest in a nearly inverted position with the forward portion fully submerged. The crew escaped through the break in the hull and proceeded to help the passengers out of the wreckage.

Qualified pilot personnel state that the airplane, having attained an airspeed of 80 knots, was fully airborne when it first left the water and that even had it been pulled off the water at a somewhat lower speed, its flight characteristics would not have been critical.

Captain Williams made his first trip in command of an airplane of the type involved, approximately two months before the accident. He had a total of 1,523 hours of flying time of which 82 hours were in the type flying boat involved and had been employed by Pan-Am for three years.

Veering Causes Crash—On her first solo flight, student pilot Ella Mae Patten made a normal take-off and, after circling the field, approached for a landing. Her first attempt was too high. On the second landing attempt, the plane contacted the ground half-way down the runway in a shallow gliding attitude and bounced about five feet. Although there was enough room to complete the landing, she applied power and took off again. The climb was very shallow and the plane was allowed to veer about 25° to the left of the direction of take off. The craft passed over the hangar at Auburn Airport, N. Y., and over a power line and highway. Then the left wing struck a 70-foot tree, the highest obstruction in the vicinity. Miss Patten was seriously injured. She had received 11½ hours of dual instruction.

Propeller Accidents—Three propeller accidents, each attributed to carelessness, have been reported by the Civil Aeronautics Board.

In one a student pilot, Miss Ellen Soene, was seriously injured when she fell headlong into the revolving propeller of an aircraft she was assisting to a parking place at the Canastota, N. Y., Municipal Airport.

Richard Harris also was seriously injured when he stepped into the path of an idling propeller at the Municipal Airport, Greenville, S. C. Harris, a student with no aviation experience, had just been employed as a mechanic's helper with the Southern Airways, Inc., and had reported for duty about 2 hours prior to the accident.

In another propeller accident, Wesley Boyd was hurt while assisting Private Pilot Clarence Winton Wheeldon taxi his plane out of a soft spot in a farm field near Memphis, Tenn., where he had landed to avoid a rainstorm.

Unauthorized Flight Fatal—Horace Dale Bunnell, a student pilot with four hours of solo flight time, and his passenger, Leonard Wayne Guard, were killed while attempting to land on a small undesignated field near Bremen, Ind.

The flight was unauthorized and Bunnell's certificate had not been endorsed for cross-country flying. Loss of control during a steep gliding turn close to the ground was the probable cause of the accident.

Crop Duster Killed—Commercial pilot Carl Ray Long was killed when the tail wheel of his plane became entangled in a power line while dusting a field of celery near Guadalupe, Calif.

The airplane was loaded within its allowable limitations, carrying 600 lbs. of insecticide, about 35 gallons of fuel, and the pilot's weight of 190 lbs. It was not equipped with a windshield and it is possible the pilot's vision was restric ed by an accumulation of dust on the goggle lenses.

Long had flown about 8,000 hours and had been engaged in crop dusting and seeding operations approximately three and a half months.

Gas Leak Causes Fire—After dusting a vegetable field near Mission, Tex., Thomas Hardin Saffold, a commercial pilot who had flown 1,375 hours, closed the hopper gate, pulled up to an altitude of 150 feet and headed for home. Shortly thereafter he detected the odor of gasoline and then noticed that the forward lower portion of the fuselage was on fire.

Saffold nosed the plane down and made a tail-high landing in a plowed field. The wheels hit a furrow and the plane bounced 20 feet into the air, settled to the ground and struck another furrow. The impact caused the landing gear to collapse.

Investigation revealed the fire was caused by a gasoline leak at a fuel line connection in the engine compartment. The aircraft was destroyed and Saffold suffered serious burns.

Recklessness Takes Toll—Immediately following take-off from the new Rusk County Airport near Henderson, Tex., Student Pilot Marcus Louis Hacker made a slight turn to the left over a power line near the end of the field and nosed his plane into an excessively steep climb. At an altitude of about 200 feet the plane leveled out momentarily, then the nose suddenly dropped and the craft stalled and dived to the ground.

Hacker had accumulated 54 hours of solo flying time. On previous occasions he had executed steep pull-ups following take-offs and had been cautioned about his over-confident attitude and reckless flying.

Maneuvered Dangerously Low—Commercial pilot James Luther Wallace and his passenger, Charles Willard Clayton, were killed when their plane collided with a tree after an exhibition of reckless acrobatic maneuvers at a dangerously low altitude. The accident occurred near Goodlettsville, Tenn.

Wallace held a commercial pilot certificate and had accumulated approximately 441 hours of solo flight time.

Drowned in Lake Michigan—Two student pilots, Wesley Walter Struve and Donald Eugene Cuene, flying abreast in separate planes en route from Leatherby Airport, Green Bay, Wis., to Racine, encountered fog near the shoreline of Lake Michigan. Struve, on the right, turned away from the lake, while Cuene turned toward the lake but later succeeded in making his way to the Brown Deer Airport. Undoubtedly, Struve, the more experienced pilot, became concerned about Cuene, headed over the lake in search of him, and flew into the water. Part of Struve's plane and his body were found 2 days later by a fisherman.

Lack of Fuel—Private Pilot Harry F. Buenger was killed and his passenger, Miss Margaret Hansen, was seriously injured when the engine of their plane stopped just after take-off from Ravenswood Airport, Des Planes, Ill.

Investigation revealed that the plane had been flown 3½ hours since refueling and about one-third of a gallon of fuel was in the tank at the time of take-off. Prior to take-off, the line boy told Buenger the plane needed refueling, that the main tank was empty. Buenger checked and found the auxiliary tank was full. He did not use the full tank, however, but took-off with the main tank valve "on" and the auxiliary tank "off."

Carelessness Causes Crash—Instead of landing straight ahead when his engine failed following take-off, Commercial Pilot Marcus Lafayette Reed, Jr., attempted to return to the Asheville-Hendersonville Airport, Asheville, N. C. This decision caused his death and minor injuries to his son, Mark, and his friend, Phillip McKensie.

Examination of the wreckage revealed the switch in the "on" position and the two wing fuel tank valves in the "off" position. The valve to the one-gallon header tank was "open"; therefore, the quantity of fuel available for the short period of taxiing and take-off was probably less than one gallon. Reed had flown approximately 1,240 hours. Carelessness is given as the cause for the engine failure.

Power Line Collisions—One pilot was killed and 2 pilots and a passenger injured in power line collisions, reports the Civil Aeronautics Board.

LeRoy Charles Luther, a student pilot with 40 solo hours, met his death while flying parallel to a highway at an altitude of about 20 feet. His plane struck an electric power line crossing the highway near the midtown section of La Crescent, Minn. Low, reckless flying and pulling the plane up into a stall probably contributed to the seriousness of the accident, the report states.

Private Pilot Harold Louis LeMire was seriously injured and his passenger, Carl G. Schlegel, received minor injuries because of failure to observe a power line during an approach for a precautionary landing. LeMire, a private pilot with 170 hours of solo flight time, stated that after practicing maneuvers about an hour and a half he became lost. Realizing his fuel supply was getting low, he decided to land and get his bearings. The accident occurred near Randallstown, Md.

The third power line collision took place during a landing at the Guymon, Okla., airport. Private Pilot Carroll O. Clement said he observed telephone wires while circling the field and thought they were the only obstruction. He started an approach to land toward the south and the aircraft struck and severed the top wire of a 30-foot-high power line. The CAB report stated "it is evident that these wires present a hazard, particularly to those not acquainted with the Guymon Airport." Clement, who was seriously injured, had flown 135 hours.

(*See Accidents, page 59*)

CAA Relaxes Regulation On Physical Examination For Private Pilot License

Physical examinations for private pilots may be made by any registered physician beginning June 1, according to an order signed by T. P. Wright, Administrator of Civil Aeronautics.

This order, directing that CAA inspectors provide applicants with a simple form to be filled out by any "competent, licensed physician" resolves one of the questions that has been troubling the aviation industry for several years.

Time Saving—"This will greatly increase the availability of physicians for this purpose," Mr. Wright's order stated. "It will provide adequately for the safety of the public, and it will permit, in conjunction with the change to be made in the Civil Air Regulations, a reduction of cost in time and money to the prospective pilot."

Several plans previously have been submitted to ease the requirements for the person who wants to learn to fly. Scarcity of medical examiners especially designated by the CAA has caused complaints, and the war has heightened this problem.

It had been proposed that several thousand additional examiners be designated to save time and travel on the part of applicants. Complete elimination of physical examination also was proposed. The plan adopted, however, appears best to serve the needs of all.

The CAA will prepare the special form for use by the "family doctor." On the back of this form will be any special instructions pertaining to the examination which it is felt are necessary and appropriate to include as a guide to the examining physician.

Private and Student Licenses Only—The change applies only to applicants for private and student pilot licenses. Physical examinations for commercial certificates, those who carry persons and property for hire, will be unchanged, and still will be given by physicians whom the CAA designates.

Six months ago the CAA requested the National Research Council to appoint a Committee to study the relation of organic disease to aviation. Recently, the CAB has asked the same Council to study problems of vision.

At the request of the Non-Scheduled Flying Advisory Committee of the CAA, a group of five doctors has been appointed. This group will study present physical requirements with the intention of producing a set of questions which can be answered "Yes" or "No" by any licensed physician and will determine whether the pilot has any functional, or organic defect, or disease, which will interfere with his piloting an airplane safely.

The Committee is appointed by the National Aeronautics Association, made up of: Dr. Edmund L. Keeney, allergies; Dr. Walter Loch, ear and equilibrium; Dr. Moses Paulson, internal medicine; Dr. Herbert Schoenrich, urologist; Dr. J. Guyton, eye, ear and throat.

Rules Crippled Veterans Eligible for Control Jobs

Amputations and other static physical defects do not disqualify applicants for jobs in CAA towers and airway traffic control centers.

Answering a direct question from the U. S. Navy Educational Service, the Aviation Medical Section of the CAA said, "Applicants for medical certification for control tower operators must meet second class airman requirements without waiver for the sight, hearing or speech organs or functions.

"Structural defects which are static in nature are evaluated separately on the basis of actual demonstration of ability under operating conditions."

CAB Report Advocates National Legislation To Ease Multiple Tax Burdens Of Airlines

A Federal law to regulate the powers of states to tax the property of airlines operating within their boundaries is urged in a report to Congress by the Civil Aeronautics Board.

The Board recommends, following its investigation which was made at the request of Congress, that legislation be enacted which will prescribe methods by which air carrier property will be apportioned for tax purposes among the states in which the lines operate.

Because there may be need for some flexibility in the application of the statute, the Board recommended that the Federal statute may provide for an existing Federal agency to interpret and administer the formula, working with an advisory committee of tax experts nominated by the states. The agency would also have the power, subject to the concurrence of the advisory committee, to adapt the statutory formula to special circumstances where the formula would otherwise result in an inequitable distribution of tax funds among the several states or where an undue or inequitable burden would be imposed upon or a discrimination exist with respect to air carriers.

The Board was critical of the taxations by the States of aviation fuel used in interstate commerce, stating that such taxation threatens to impede the development of air transportation. It noted that well over half of the States had consistently refrained from the taxation of aviation gasoline and it expressed its belief that all States should avoid the taxation of aviation fuel used in interstate commerce.

Congressional inquiry followed the decision of the Supreme Court in the Northwest Airlines case in which concurring justices had suggested that the problem of multiple taxation should receive the attention of the Congress. In that case Minnesota had taxed the entire airplane fleet of Northwest Airlines to its full value notwithstanding the fact that six of the seven other States through which the airline operated had each also taxed a portion of the same fleet.

What, Only 100,000 Miles An Hour!

TOPPING all previous predictions of airplane speed Hall L. Hibbard, vice president and chief engineer of the Lockheed Air Corporation, is quoted in an Associated Press dispatch from Los Angeles as saying a rocket plane with a speed of 100,000 miles an hour and flying 100 miles above the earth is a conceivable development of the future.

Lockheed designers, he said, are now placing the finishing touches on a plane which may develop that speed. "There is no problem in connection with the use of jet propulsion that either has not been solved, or cannot be solved."

Science Award

(*Continued from page* 51)

"In order that the United States may be safe it must be just and cooperative in its international dealings, but it must also be strong internally. One aspect of this strength must be scientific preparedness so that we cannot be caught technically at a disadvantage. This is important as never before because no other nation would again attack us unless it were convinced that it would secure a speedy victory by superior technical methods.

"Ostrich-like, the pacifists of the 1920's and 1930's ignored the Hitlers, Mussolinis, Hirohitos and their followers. As a result, the Nazis, Fascists and Japs were encouraged, not deterred, by the pledges of our youth never to bear arms, or by our refusal to strengthen the defenses of Guam, or to mount modern guns on Corregidor."

Incredible Speed Discussed—In his discussion of rocket propelled aircraft Mr. Pendray wrote in Harper's Magazine for March, "The passenger carrying rocket will present a form of speed competition impossible for others to reach. As against the dimly possible 1,500-mile-an-hour top speed of the rocket boosted turbo-jet the rocket ship for long distance flying will be able to make—indeed will have to make—velocities as high as 7,000 to 12,000 feet a second at the end of powered flight—or more than 5,000 miles an hour!"

In discussing human tolerance to acceleration he writes, "Fortunately for the future of the passenger rocket . . . we find that a long range rocket, everything considered, should have an average acceleration of about three times gravity.

"We may therefore accept it as a safe guess not only that passenger rockets could be manufactured which would transport human beings over long distances at mile-a-second speeds, but that the passenger would be able, under most circumstances to withstand without too much discomfort the acceleration involved."

The secret of the speed of the jet plane's performance as revealed by General Arnold lies, in part in its aerodynamically new knife-edged wing which helps master the "problems encountered when the speed of sound is approached or surpassed." The lightness of the ship and her powerful jet engine, built by the General Electric Company from a British design, are potent contributing factors.

Globe Aviation Standards Is Entering Final Stage

Aiming to put in final form the technical documents drafted at the Chicago International Civil Aviation Conference as near as possible to May 1, the goal set by the conference, United States committees of the Provisional International Civil Aviation Organization, began a series of meetings with industry representatives on April 28.

The Meteorological Committee met with U. S. airlines personnel at Weather Bureau regional offices in New York, under the chairmanship of Delbert M. Little, of the Weather Bureau, with Robert W. Craig of the same agency as secretary. Other members of the committee present were G. M. French, Civil Aeronautics Board, L. Ross Hayes, Civil Aeronautics Administration, and Lt. Col. D. J. Smith, Army Air Forces alternate member.

Committee meetings were scheduled for May 7-9 in Washington on Rules of the Air and Standards for Operating and Mechanical personnel.

As the committees complete their revisions of the technical annexes, they will be submitted to A. S. Koch, Assistant Administrator of CAA, who is acting as Coordinator of the PICAO technical work. When he has reconciled any parts which may conflict, the State Department will transmit the U. S. recommendations to other nations for study before a meeting of the Interim Council is convened at Montreal.

To date, 10 of the 26 requisite signatures to the Interim Agreement have been received, but it is expected that the necessary number will be on hand by June 7 which is the last day on which the 20 nations named at Chicago for Council seats can signify their acceptance. Four of the signatories thus far are not Council nominees, so only two more nations in this category are required.

Airline Orders

Service

No. 3558 dismisses applications of Des Moines Flying Service, Maxwell Elmer McCornock, North American Airlines, Ltd., Northern Airlines, and Fliteways, Inc. for certificates in the matter of the North Central Case. (Mar. 26.)

No. 3559 dismisses petition of Delta Air Corp. for a temporary nonstop authorization between Meridian, Miss., and New Orleans, La. (Mar. 26.)

No. 3560 dismisses application of Northern Airlines for a certificate. (Mar. 26.)

No. 3561 dismisses application of North American Airlines for a temporary or permanent certificate. (Mar. 26.)

No. 3562 dismisses application of F. X. Bowman for a certificate. (Mar. 26.)

No. 3569 severs applications of Eastern Air Lines and National Airlines for certificates from the proceeding known as the Southeastern States Case and assigns them for hearing on April 5. (Mar. 28.)

No. 3570 denies the City of Indianapolis permission to intervene in applications for certificates authorizing additional air service in Mexico, Central and South America, and the Caribbean area. (Mar. 29.)

No. 3574 authorizes American Airlines to inaugurate on April 1, nonstop service between Washington, D. C. and Memphis, Tenn., and between Knoxville, Tenn., and Memphis, Tenn., on route No. 23. (Apr. 3.)

No. 3575 dismisses application of U. N. Airships, Inc. for a certificate. (Apr. 4.)

No. 3580 denies petitions of Chicago and Southern Air Lines and Braniff Airways for reconsideration of Board order No. 3513 which consolidated applications of Aero Pickup Service Corp. and other applicants for certificates with the proceeding known as the Southeastern States Case. (Apr. 6.)

No. 3581 amends order No. 3513 so that other applications on file with the Board, proposing service in the general area involved in the Southeastern States Case, can be determined in the consolidated proceeding; orders that that portion of the application of American Airlines requesting that its certificate be amended so as to include (a) Louisville, Ky., Evansville, Ind., and Paducah, Ky., as intermediate points on route No. 23 between Washington, D. C. and Memphis and (b) Louisville, Ky., as an intermediate point on route No. 23 between Nashville and Knoxville, Tenn., be severed from docket 934 and included in docket 1766; orders that that portion of Chicago and Southern's application requesting a certificate authorizing air transportation between (a) Memphis, Tenn. and Jacksonville, Fla., via Atlanta, Ga., (b) Memphis, Tenn., and Jacksonville, Fla., via Chattanooga, Tenn., and Atlanta, Ga., (c) Memphis, Tenn., and Jacksonville, Fla., via Birmingham, Ala., and Atlanta, Ga., be severed from docket 1074 and assigned docket 1829; severs that portion of Braniff's application requesting a certificate authorizing air transportation between Washington, D. C., and New York/Newark via Philadelphia from docket 1717 and assigns it docket 1830; makes the applications of American Airlines, docket 1766, Chicago and Southern Air Lines, docket 1829, Braniff Airways, docket 1717, and TWA, docket 1727, a part of the consolidated proceeding covered by order No. 3513. (Apr. 6.)

No. 3582 denies the City of Detroit permission to intervene in applications for certificates authorizing additional air service in Mexico, Central and South America, and the Caribbean area—docket 525 et al. (Apr. 6.)

No. 3585 dismisses complaint filed by United Air Lines on July 3, 1944, requesting the Board to amend Transcontinental and Western Air's certificate for route No. 37 so as to prohibit TWA from interrupting flight 15 at Los Angeles for a period in excess of 45 minutes. The Board found that there have been no flights of TWA serving Los Angeles and San Francisco which stop at Los Angeles for more than 45 minutes. (Apr. 6.)

No. 3587 denies the petition of National Airlines insofar as it seeks reconsideration of Board order No. 3497, involving docket 1587, which was included in the Florida Case, and upon which public hearing has been completed; grants that part of the petition which asks that the unsevered portion of docket 1384 be amended to include a request for either a permanent or a temporary certificate. (Apr. 7.)

No. 3588 orders that the application of Carolina Airways for a certificate be withdrawn from the proceeding known as the Southeastern States Case—docket 501 et al—and that action be deferred. Carolina Airways requested this action in a petition filed March 24, 1945, because its entire management personnel is on active duty in the Armed Forces. (Apr. 11.)

No. 3589 dismisses Blue Grass Airline's application—docket 937—which requested authorization to conduct air transport operations. (Apr. 11.)

No. 3590 dismisses the application of Kentucky-Tennessee Airlines for a certificate. (Apr. 11.)

No. 3591 orders that Northeast Airlines be notified that the national defense no longer requires delaying inauguration of service on route 65. (Apr. 11.)

No. 3592 dismisses application of Philadelphia and Eastern Airlines for a certificate. (Apr. 11.)

No. 3593 orders that American Airlines be notified that the national defense no longer requires delaying inauguration of service to and from Oklahoma City and Tulsa, Okla., on routes 4 and 23. (Apr. 11.)

No. 3597 dismisses application of Shawmut Air Freight & Transport Co. for a certificate. (Apr. 13.)

No. 3598 denies American Airline's request that it be permitted to inaugurate nonstop services on or about July 1, 1945, between Oklahoma City, Okla., and Tucson, Ariz., and between Oklahoma City, and Phoenix, Ariz., points on route 4. (Apr. 14.)

No. 3607 notifies Northwest Airlines that the national defense no longer requires delaying inauguration of service between Minneapolis-St. Paul, Minn., and New York, N. Y.

No. 3610 permits Northeast Airlines to serve New York, N. Y., beginning May 1, through the use of LaGuardia Field. (Apr. 23.)

No. 3611 denies petition of State Airlines, Inc. for reconsideration of Board order No. 3524 which dealt with the Great Lakes to Florida Case. (Apr. 23.)

Miscellaneous

No. 3568 approves an agreement by and between United Air Lines and Mid-Continent Airlines relating to the lease of a station and other facilities by United to Mid-Continent at Kansas City. (Mar. 27.)

No. 3583 approves interlocking relationships of the holding by Josiah G. Holland of the positions as Director of Continental Air Lines, Inc., and President and Director of The Northwestern Terminal Railroad Co. (Apr. 6.)

No. 3584 approves interlocking relationships of the holding by Thomas B. Wilson of the positions as Director and Chairman of the Board of Directors of TWA, Director of TACA Airways, S. A., and Director of TACA Airways Agency, Inc. (Apr. 6.)

No. 3594 approves interlocking relationships of the holding by W. F. Long of the positions as President and Chairman of the Board of Directors of Essair, Inc., President and Director of Dallas Aviation School, Inc., individual owner of Dallas Aviation School and Air College, and limited partner of Terrell Aviation School, Ltd. (Apr. 12.)

No. 3605 approves an application of George S. Schwamm doing business as Petersburg Air Service, Petersburg, Alaska, for a loan in the amount of $14,000 from the RFC. (Apr. 20.)

Airman Orders

Suspensions

No. 3563 suspends the student certificate of Edward Jacob Acree for 60 days because he carried a passenger and in addition flew in the vicinity of Hubbard Fld., Reno, Nev., at an altitude of less than 500 ft. (Mar. 27.)

No. 3567 suspends the private certificate of Everett Leland Putney for 90 days. Putney piloted an aircraft within the airway traffic control area, and landed after official sunset, at Sky Harbor Airport, Phoenix, Ariz., without having filed a flight plan. He also violated other provisions of the Civil Air Regulations. (Mar. 27.)

No. 3571 suspends the student certificate of Louis W. Babbs for four months. Babbs failed to circle the Lunken Airport, Cincinnati, Ohio, sufficiently to observe other traffic while he was coming in for a landing. He also violated other provisions of the Civil Air Regulations. (Apr. 3.)

No. 3572 suspends the student certificate of Gordon Arthur Dittman for 90 days because he piloted an aircraft on a solo flight from Northport, White Bear Lake, Minn., to Boardman, Wis., although no solo flight area had been prescribed and approved for him and he had not been certified for cross-country solo flights. He also flew at an altitude of less than 500 ft. in the vicinity of Boardman. (Apr. 3.)

No. 3573 suspends the student certificate of John T. Patterson until he takes four hrs. of dual flight instruction and his instructor certifies he is competent to fly solo. Patterson, on an intended flight from Pittsburgh to Buffalo, encountered instrument weather, failed to land at the nearest airport at which contact weather conditions prevailed, and failed to alter his course so that his flight might continue under contact weather conditions. He held no instrument rating. (Apr. 3.)

No 3578 suspends the student certificate of Edward Duvall Spicer for 90 days because he carried his ten-year old daughter as a passenger on a flight from Horace Williams Airport, Chapel Hill, N. C., to Westminster, Md. (Apr. 6.)

No. 3579 suspends the student certificate of Francis X. Marsh for 60 days because he failed to keep an accurate record of his flying time in his log book and made solo flights outside of the area within a 150-mile radius of the operating base of his instructor. (Apr. 6.)

No. 3586 suspends the student certificate of Thomas P. Leigh, Jr. for 90 days because he flew over an open air assembly of persons at the fair grounds, Shreveport, La., at an altitude of less than 1000 ft. (Apr. 7.)

No. 3595 suspends student certificate of Burton Blackmer for 60 days. Blackmer piloted an aircraft in the vicinity of Muskegon Heights, Mich., at an altitude of less than 500 ft. (Apr. 13.)

No. 3596 suspends student certificate of Sidney Ray Bernhardt for 6 months because he piloted an aircraft in the vicinity of Salisbury, N. C., at an altitude of less than 500 ft. It apears that in this case the low flying resulted in Bernhardt's crashing into a garage at the rear of a home. (Apr. 13.)

No. 3600 suspends student certificate of Robert Alexander Morse for 60 days, or until such time as he has passed the written examinations on Part 60 of the Civil Air Regulations and also a flight check given by a certificated instructor. Morse was involved in an aircraft accident and failed to make a written report immediately to the Civil Aeronautics Board. He also violated other provisions of the Civil Air Regulations. (Apr. 17.)

No. 3601 suspends the student certificate of Doris Ruth Dohring for 90 days because she carried a passenger and landed on, and took off from, an undesignated field. (Apr. 17.)

No. 3603 suspends the commercial certificate with flight instructor rating of Denver Eugene Miner for 6 months. Miner flew at an altitude of approximately 350 ft. over the congested area of the business district of Okmulgee, Okla., and violated other provisions of the Civil Air Regulations. (Apr. 17.)

No. 3606 suspends flight instructor rating of Sam Hobson Coffman until he passes the flight examination required by the Administrator for the original issuance of such rating. In a special flight re-examination by an inspector for the Administrator at Commercial Airport, Wichita Falls, Tex., Coffman failed to demonstrate satisfactorily that he had the aeronautical skill necessary for the holding of a flight instructor rating. (Apr. 20.)

Revocations

No. 3564 revokes the commercial certificate held by Hassen Ali Easmeil because he altered his airman rating record to indicate he was the holder of a 0-330 hp rating and referred to notes during an examination for a flight instructor rating. (Mar. 27.)

No. 3565 revokes the private certificate of Malcolm L. Cunningham because he flew over the Brown Shipbuilding Corp. and the Houston Todd Shipbuilding Corp. docks and yards in Houston, Tex., at an altitude of less than 500 ft. and violated other provisions of the Civil Air Regulations. (Mar. 27.)

No. 3566 revokes the student certificate held by Randell E. Rohden because he flew at an altitude of less than 1,000 ft. over congested areas of the residential and downtown section of Tex. City, Tex., and landed on, and took off from, an undesignated landing area without prior authorization. (Mar. 27.)

No. 3576 revokes the student certificate of William G. Mahar because he flew over the town of Hettinger, N. Dak., at an altitude of less than 1,000 ft. and violated other provisions of the Civil Air Regulations. (Apr. 6.)

No. 3577 revokes the student certificate of Donald S. Overholser because he carried a passenger and violated other provisions of the Civil Air Regulations. (Apr. 6.)

No. 3604 revokes the student certificate of Glenn Christian Bahler because he carried a passenger and violated other provisions of the Civil Air Regulations. Bahler may apply for any type of pilot certificate for which he may be qualified within one year from March 16, 1945. (Apr. 17.)

No. 3608 revokes the student certificate of Gail Nelson Doran because he carried a passenger and violated other provisions of the Civil Air Regulations. (Apr. 20.)

Miscellaneous

No. 3599 denies George Pendley's petition requesting that the Board waive the age requirements of Section 20.100 of the Civil Air Regulations. Pendley is 15. (Apr. 17.)

No. 3602 denies Ben C. Arquitt's request that the Board modify its order—No. 2995—which revokes his flight instructor rating because, while giving dual instruction to a student, he took over the controls and deliberately maneuvered the aircraft so close to a clump of trees that a wing of the plane brushed through the leaves. Arquitt had also violated other provisions of the Civil Air Regulations. (Apr. 17.)

No. 3609 dismisses the Administrator's complaint which alleged that Charles J. Wamser, who holds a private certificate, violated certain provisions of the Civil Air Regulations. (Apr. 20.)

Regulations

Amdt. 04-3 ..... *Effective Apr. 6, 1945*

04.71 Modified performance requirements for multiengine airplanes not certificated in the transport category. The weight of any multiengine airplane manufactured pursuant to a type certificate issued prior to January 1, 1941, may be increased beyond the values corresponding to the landing speed specified in § 04.700 and take-off requirements of § 04.701, subject to the following conditions:

(a) The increased weight shall be known as the provisional weight (§ 04.103). The standard weight (§ 04.102) shall be the maximum permissible weight for landing. The provisional weight shall be the maximum permissible weight for take-off.

(b) Compliance with all the airworthiness requirements except landing speed and take-off is required at the provisional weight, except that the provisional weight may exceed the design weight on which the structural loads for the landing conditions are based by an amount not greater than 15 percent, provided that the airplane is shown to be capable of safely withstanding the ground or water shock loads incident to taking off at the provisional weight.

(c) The airplane shall be provided with suitable means for the rapid and safe discharge of a quantity of fuel sufficient to reduce its weight from the provisional weight to the standard weight.

(d) In no case shall the provisional weight exceed a value corresponding to a landing speed of 5 miles per hour in excess of that specified in § 04.700, a take-off distance of 1,500 feet in the case of landplanes, or a take-off time of 60 seconds in the case of seaplanes; nor shall any provisional weight authorized in respect to any type of airplane after January 1, 1945 exceed the value corresponding to a rate of climb of at least 180 feet per minute at an altitude of 5,000 feet with the critical engine inoperative, its propeller windmilling with the propeller control in a position which would allow the engine (if operating normally and within approved limits) to develop at least 50 percent of maximum-except-take-off engine speed, all other engines operating at the take-off power available at such altitude, the landing gear retracted, center of gravity in the most unfavorable position permitted for take-off, and the flaps in the take-off position.

Amdt. 29-3 ..... *Effective June 1, 1945*

§ 2912 of the Civil Air Regulations is amended by repealing subparagraphs (2) and (3) of paragraph (a).

Reg. 319-B ..... *Effective Apr. 8, 1945*

Extending the effective period of Special Civil Air Regulation Serial Number 319—Noncompliance with the requirements of § 40.2611 (b) of the Civil Air Regulations.

Special Civil Air Regulation Serial Number 319 is amended by striking the words "April 8, 1945" and inserting in lieu thereof the words "October 8, 1945."

Declares Public Against 'Chosen Instrument' Plan

American public opinion and our traditional belief in competitive private enterprise is opposed to the "chosen instrument" proposal in relation to international air traffic L. Welch Pogue, chairman of the Civil Aeronautics Board, told the Senate subcommittee on aviation during a recent hearing on Senate Resolution 326.

Mr. Pogue in concluding his statement said, "We must place in competition, at least potentially, our managerial talent, our technical competence and our genius in other aspects of international air transportation operation if we are to draw from them achievements which will permit us to surpass those already attained and maintain the strength necessary to assure our excellence in international air transportation."

Accidents

(*Continued from page 56*)

Two Hurt in Crash—Benjamin West Sherrell, accompanied by his wife, Mary, took off from the Paris Airport, Ark., for a local pleasure flight. When an altitude of 50 feet had been reached, partial engine failure occurred and in an attempt to stretch the glide over some wires to reach the only available field, Sherrell stalled the plane.

Loss of power was due to malfunctioning of the carburetor following dislodgment of its primary venturi. This was caused by a worn retaining assembly which became loose and permitted the venturi supporting "arms" to drop off their supporting lugs. The carburetor manufacturer has since issued a service bulletin and instructions to correct this condition.

Sherrell held a commercial certificate and had logged about 911 hours of solo flight time. He suffered minor hurts but his wife was seriously injured.

Dives Into Building—"Extreme emotional instability" was cited in a CAB report as the cause of an accident near Fairbanks, Alaska. Student pilot Everett H. Hobson, an Army sergeant, with about 9 hours solo flying time, deliberately dived into a concrete building of the University of Alaska. Investigation revealed that a girl in whom Hobson was interested usually worked in the building. She stated that during a long distance telephone conversation with Hobson on the evening before the accident "his conversation was very incoherent and difficult to understand."

Pilot and Passenger Injured—An improperly installed control stick was responsible for a plane crash in which the pilot, John Ernest Golob, and his passenger, Miss Doshia Coomer were seriously injured.

Preparatory to making a local pleasure flight, Golob installed the rear control stick in the rear cockpit and, with his passenger in the front seat, taxied to the end of the field for take-off. After a short run the plane left the ground in an almost stalled attitude, climbed steeply to an altitude of 75 feet, stalled, fell off to the right and crashed. Evidence indicated that Golob installed the stick in such a manner that the elevator could travel only between the full up position and a point approximately 5° above neutral, thereby making normal longitudinal control impossible.

Golob is a private pilot with approximately 800 solo hours. The accident occurred at the South Dayton Airport, Dayton, Ohio.

Inattention Causes Crash—Losing control of his plane while circling his brother's automobile resulted in a crash and serious injuries to student pilot Rolland Arthur Mihalik.

Mihalik took off from the Smith Airport, Plymouth, Mich., on a cross-country flight to Bitely, Mich. By prearrangement with his brother, with whom he had planned a hunting trip, Mihalik was to circle the car when he sighted it on the road to Bitely. Spotting the car near Portland, the pilot started circling the automobile, diverted his attention from his flying, thereby failing to recognize the approaching stall and spin until it was too late to effect recovery. The aircraft was demolished.

AIR REGULATIONS . . . As of May 1, 1945

Title	Part No.	Price		Date Latest Edition		No. Amendments Issued	
		Part	Manual	Part	Manual	Part	Manual
Aircraft							
Airworthiness Certificates	01	$0.05	None	10/15/42	None	1[2]	
Type and Production Certificates	02	.05	$0.10	3/1/41	3/15/45		
Airplane Airworthiness	04	.15	$0.45	11/1/43	7/1/44	3	
Engine Airworthiness	13	.05	None	8/1/41	None		
Propeller Airworthiness	14	.05	[1]	7/15/42	12/1/38		
Equipment Airworthiness	15	Free	$0.10	4/15/44	7/1/38		
Radio Equipment Airworthiness	16	0.05	Free	2/13/41	2/13/41		1
Maintenance, Repair, and Alteration of Aircraft, Engines, Propellers, Instruments	18	.05	0.50	9/1/42	6/1/43		
Airmen							
Pilot certificates	20	.10	None	2/15/44	None	6	
Airline Pilot Rating	21	.05	None	10/1/42	None	3	
Lighter-than-air Pilot Certificates	22	.05	None	10/15/42	None		
Mechanic Certificates	24	.05	None	7/1/43	None		
Parachute Technician Certificates	25	.05	None	12/15/43	None		
Traffic Control Tower Operator Certificates	26	.05	None	2/1/44	None		
Aircraft Dispatcher Certificates	27	.05	None	10/1/43	None		
Physical Standards for Airmen	29	.05	None	6/1/42	None	3	
Air Carriers							
Air Carrier Operating Certification	40	.10	None	10/10/44	None		
Air Agencies							
Flying School Rating	50	.05	Free	11/1/40	12/40	3	
Ground Instructor Rating	51	.05	None	12/15/43	None		
Repair Station Rating	52	.05	Free	10/1/42	2/41		
Mechanic School Rating	53	.05	[1]	8/1/42	5/40		
Parachute Loft Certificates and Ratings	54	.05	None	1/21/43	None		
Air Navigation							
Air Traffic Rules	60	.10	0.15	8/15/44	8/1/43	3	
Scheduled Air Carrier Rules	61	.10	None	2/1/44	None	2	
Foreign Air Carrier Regulations	66	.05	None	3/1/42	None		
Miscellaneous							
Definitions	98	.05	None	10/15/42	None		
Regulations of the Administrator							
Aircraft Registration Certificates	501	Free	None	3/31/43	None		
Recordation of Aircraft Ownership	503	Free	None	3/31/43	None		
Seizure of Aircraft	531	Free	None	12/8/41	None		
Regulations Governing the Distribution and Use of Aviation Gasoline	534	Free	None	9/16/44	None		

[1] Out of stock. [2] Special regulation No. 223.

Note: Those parts and manuals for which there is a price are obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. Remittances must be by cash or by money order, payable to the Superintendent.

Burden

(*Continued from page 50*)

ten years after the Japanese war the revenues of the domestic industry may be 500 to 600 millions or as much as the total passenger revenues of all our domestic railroads before the war.

Luxury Goods By Air—"The bulk of air shipments will still be confined to luxury goods, high value perishables, and emergency shipments—the type of goods that go by rail express. In percentage terms, probably only 10 to 25 per cent of the airlines' revenues will come from merchandise as compared to 90 per cent in the case of the railroads.

"This expansion in air transport will mean a big industry, employing perhaps 90,000 to 100,000 persons, but it will not—because of the great number of miles which a high speed modern transport airplane can be flown in a year, require any vast number of airplanes. Dr. Warner, vice-chairman of the CAB, has estimated that 600 to 800 large passenger aircraft of 40- to 60-passenger capacity and 300 smaller two-engined airplanes of 20- to 30-passenger capacity will be able to do the job. Such a fleet would have six times the seating capacity of the prewar fleet of 300-odd 20-passenger twin-engined airplanes and would be carrying about eight times the traffic."

In looking toward the future, it is well, he said, "to begin with the outlook for the manufacturer of military airplanes.

"Contrary to popular estimation, commercial aviation—air transport, private flying, and the manufacture of commercial aircraft—is not likely to grow to such gigantic proportions that military sales will assume negligible importance in the postwar period.

Importance of Military Flying—"On the contrary, if the United States should decide to maintain a 20,000-plane air force as compared to the 4,000 military planes it had in 1940, annual sales of military aircraft would be twice the total commercial sales which can be hoped for even 8 to 10 years after the defeat of Japan.

"The 20,000-plane figure is of course the boldest of assumptions, for the military market is impossible to forecast with even reasonable exactness. The number of military aircraft manufactured each year will depend on the size of our air force and that in turn will depend on the nature of the peace and the attitude of the public and the Congress to military expenditures in the postwar period.

"The armed services are fully aware of the catastrophic effect on the industry of the almost complete cessation of military purchases which followed the last war and are almost certain to recommend purchasing policies to avoid a repetition of this situation.

Plane's Position Established—"The airplane is so firmly established as a major weapon and future invention holds promise to such increasing development that the air forces will clearly absorb a far higher proportion of whatever military budgets are approved than was true before the war. Moreover, the rate of technical progress in the next fifteen years promises to be far more rapid than over the last fifteen. The Services realize the vital necessity of keeping their equipment up-to-date by replacing a substantial portion each year. This factor will tend to raise annual purchases to a high proportion—probably at least 20 per cent—of the total air force approved. Thus, although we all hope and expect a peace which will permit our armed forces to be kept at a minimum, there is no question that aviation will receive an appropriate share of our postwar military budget."

Non-Scheduled Flying Session Continues in Des Moines

CONTINUING the meeting which opened in Washington, March 22, the Non-Scheduled Flying Advisory Committee of the Civil Aeronautics Administration began a two-day session in Des Moines, April 14.

Despite the fact the Washington meeting had been extended from two to four days not all of the items on the agenda were covered, and it was to consider the more pressing of these that the Des Moines session was called.

Nearly all sections of the country are represented in the committee whose members can speak for industries and activities related to aviation.

Members of the committee are shown in the accompanying photograph.

Seated, left to right: Beverly Howard, airport service operators, Orangeburg, S. C.; Ed Williamson, private fliers of the CAA's seventh region, Seattle, Wash.; Harry Playford, private fliers, region 2, St. Petersburg, Fla.; Arthur I. Boreman, the aviation consumer, Des Moines, Iowa; and T. P. Wright, CAA Administrator.

Standing, left to right: Joseph Bergin, state aviation organizations, Salt Lake City, Utah; Douglas Robinson, private fliers, region 6, Tucson, Ariz.; William A. Mara, private fliers, region 3, Detroit, Mich.; Ed Garbacz, private fliers, region 4, Little Rock, Ark.; John Groves, airlines, Washington, D. C.; Fred Weick, private fliers, region 1, Washington, D. C.; James C. Johnson, private fliers, region 5, Springfield, Mo.; and W. T. Piper, airplane manufacturers, Lock Haven, Pa.

Landing Field Beacon Prevents Plane Disaster

Three passengers and the crew of a distressed airplane were saved from possible death, certainly serious injury, and the destruction of their airplane by the beacon lights on the CAA intermediate landing field at Prairie du Rocher, Ill.

The incident was reported by George Clements, a mechanician, to I. J. Rovang, superintendent of airways, CAA fifth region.

Clements told Rovang he saw the plane land, just clearing the boundary lights at the south end of the field. It contained besides the crew, a man, woman and boy, none of whom were equipped with parachutes.

The pilot said, "I was out over those mountains west of here when my oil line broke and my engine froze tight. Luckily I had lots of altitude, so I decided to glide as far as possible toward the Mississippi river and try to find some bottom land for a crash landing. I believe we were all cheered when the boy said he saw a beacon with a green light flashing.

"I kept my eyes glued on that green light and headed straight for it, and it sure was a glad sight when we saw that light, and a relief to know we would be able to make it and land on a nice smooth field."

The incident emphasizes the purpose and importance of the intermediate landing fields, and Clements in his report observed: "I thought I would mention the happening so we can realize why we are on the job and what it is all about."

Maloy (*Continued from page 49*)

"The airplane should have a stable landing gear with no trick landing or taxiing characteristics. It should be easily controllable on the ground and equipped with brakes which produce no dangerous tendency to nose over in any operation condition reasonably expected. All landplanes should be satisfactorily controllable with no exceptional degree of skill or alertness on the part of the pilot in normal landings during which brakes or engine power are not used to maintain a straight path.

"The item of visibility both on the ground and in the air is a very important one which must be given much greater attention if we are to maintain an adequate degree of safety with the anticipated increased number of aircraft in operation.

"It has been found very difficult to specify the fields of unobstructed view. It is hoped that in the near future some definite specification may be developed that will provide adequate safety without unduly dictating the design.

"Another item concerns propeller protection. This has not been too great a source of difficulty up to this time, although it is anticipated that a wide use of the airplane will result in a larger number of accidents, particularly in the family type airplane, unless some provision is made to protect the unwary and especially children from contact with a rotating propeller. It is believed that this protection should be required even to the extent of installing a ring around the propeller which would, if anything, increase the efficiency of the propeller unit. Probably the best approach to this solution thus far has been the twin-boomed pusher arrangement.

"Ease of maintenance is the next important item which is very often overlooked or not given sufficient emphasis in the private airplane where first cost is also an important factor. The fact that ease of maintenance must be emphasized in the design stage is clearly brought out in the study of structural failures and defects reports.

Weight and Balance Problem—"In line with keeping the operations problems of the private flier to a bare minimum, it appears essential that something be done to solve the weight and balance problem. At the present time, it is not an important factor in the average two-place aircraft. However, when consideration is given to the four- or five-place airplane, which will probably be the family airplane of the future, it is considered essential that the aircraft be designed for full gas and oil, all seats occupied by 170-pound passengers, and all baggage compartments full without exceeding the allowable gross weight or center of gravity limits. The gas and oil supply should be sufficient for a minimum of three hours or four hundred miles cruising. It appears that the only alternative to such a requirement would be to provide an automatic indicating system which would accurately inform the pilot of the gross weight and center of gravity location of the airplane on the ground prior to take-off.

"In conclusion, it is believed that all the conditions in the items mentioned above are not only possible of realization but an eventual 'must.' They are offered in the spirit of a challenge to the industry to build *now* the safe type of airplane affording a maximum of utility combined with ease of operation and maintenance that the general flying public is going to demand."

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